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| 10/673,892 | 09/29/2003 | Mohammad Hossein Zarrabizadeh | 22 | 1989 |

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Alcatel-Lucent USA Inc.
600-700 Mountain Avenue
Murray Hill, NJ 07974

| EXAMINER | |
|---|---|
| LEE, JOHN W | |

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| 2624 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/673,892 | ZARRABIZADEH, MOHAMMAD HOSSEIN | |
| | Examiner | Art Unit | |
| | JOHN Wahnkyo LEE | 2624 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *23 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-57* is/are pending in the application.

4a) Of the above claim(s) *38-52,55 and 56* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37, 53-54 and 57* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

- The application was forwarded to the examiner on 23 October 2009.

### *Response to Arguments/Amendments*

1. Applicant's arguments and amendments filed on 13 October 2009 have been fully considered.

2. Applicant's argument, with respect to claim 54 under 35 U.S.C. 101, has been considered, and the rejection is withdrawn since the claim was amended to be a statutory subject matter.

3. Applicant's arguments, with respect to claims 1-9, 11, 13-18, 20-32, 34-37, 53-54 and 57 under 35 U.S.C. 102 (b), have been considered, but are not persuasive.

The applicant argues that Reed, the prior art cited by the examiner, does not teach placing the bits of watermark data into at least one selected bit of an average value of a chrominance portion over a block of the video signals. However, the examiner disagrees with the applicant. In col. 38, lines 20-24, Reed discloses that color channels to which the watermark is applied are altered depending on a characteristic color of an image block to be transformed to transform coefficient for watermark encoding, which can be computed as an average of the color for that block. This method is to modify to effect the desired changes to the image, so it readily apparent that only selected bits of the color block image will be used. If the invention uses all the bits, it will not obtain the desired changes to the image. Moreover, the characteristic of the color is computed as an average of the transform coefficients for watermarking

encoding. In other words, the transform coefficients are bits, and the average has to be average values of these transform coefficient or bits. For these reasons, Reed does disclose the claim limitation that applicant argues in the response. Therefore, the rejections to claims 1-9, 11, 13-18, 20-32, 34-37, 53-54 and 57 cannot be withdrawn.

4. Applicant's arguments, with respect to claims 10, 12, 19 and 33 under 35 U.S.C. 103 (a), but are not persuasive. For the reasons discussed above, the rejections to claims 10, 12, 19 and 33 cannot be withdrawn.

### *Claim Rejections - 35 USC § 112*

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-22 and 54 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It is not supported or disclosed that extracting the watermark or the encoding the chrominance bits automatically in the specification. It is required for the applicant to clarify this.

### *Claim Rejections - 35 USC § 102*

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-9, 11, 13-18, 20-32, 34-37, 53-54 and 57 are rejected under 35 U.S.C. 102(e) as being anticipated by Reed et al. (US 6,590,996 B1).

Regarding claim 1, Reed discloses a method of watermarking (col.3, line 57, "watermark) a video signal (col. 4, lines 10-20, "host signal … video") including additional information (col. 3, line 57, "information signal") therein, the method the steps of automatically impressing (col. 15, lines 22, "insert") at least a portion of said additional information (col. 15, lines 22, "two watermark component") upon a chrominance portion (col. 15, line 31, "color plane … chrominance plane") of said video signal (col. 4, lines 10-20, "host signal … video") by placing it in at least one selected bit position of a value (col. 15, line 34, "bit") derived from an average of said chrominance portion (col. 15, line 31, "color plane … chrominance plane") over a block (col. 38, lines 20-24; "Color channels to which the watermark is applied are altered depending on a characteristic color of an image block to be transformed to transform coefficient for watermark encoding, which can be computed as an average of the color for that block.") of said video signal (col. 4, lines 10-20, "host signal … video").

Regarding claim 2, Reed discloses wherein said portion of said additional information being a bit (col. 15, line 34, "bit").

Regarding claim 3, Reed discloses wherein said additional information replacing at least one bit of said value(col. 15, line 34, "bit") derived from said average of said

chrominance (col. 15, line 31, "color plane … chrominance plane") portion over said block (col. 2, lines 50-51, "average color of the block").

Regarding claim 4, Reed discloses wherein said value derived from an average of said chrominance portion over a block of said video signal being the average of the values of said chrominance portion for each pixel of said block (Fig. 7; col. 14, lines 41-49, "… pixel blocks").

Regarding claim 5, Reed wherein said additional information being not substantially perceivable by the human visual system (col. 34, lines 1-2, "substantially imperceptible to human visual perception") when said video signal including said additional information is displayed on a display device (Fig. 20-1247; col. 33, line 20, "monitor").

Regarding claim 6, Reed discloses wherein said additional information being impressed by changing the value of said chrominance portion of various pixels of said block, and wherein the magnitude of the change in value any pixel is a function of the amount of change that can be introduced into said pixel without resulting (Fig. 14-958; col. 23, lines 46-67, "… magnitude …") in an artifact that is substantially detectable by the human visual system (col. 34, lines 1-2, "substantially imperceptible to human visual perception").

Regarding claim 7, Reed discloses wherein said additional information being impressed by changing the value of said chrominance portion of various pixels of said block, and wherein the magnitude of the change in value any pixel does not exceed the amount of change (Fig. 14-958; col. 23, lines 46-67, "… magnitude …") that can be

introduced into said pixel without resulting in an artifact that is substantially detectable by the human visual system (col. 34, lines 1-2, "substantially imperceptible to human visual perception").

Regarding claim 8, Reed discloses wherein the position of said selected bit (col. 15, line 34, "bit") being fixed for at least one block of at least one frame of (col. 2, lines 50-51, "average color of the block") said video signal (col. 4, lines 10-20, "host signal … video").

Regarding claim 9, Reed discloses wherein the position of said selected bit being dynamically determined (col. 15, line 34, "can range from a single bit") for at least one block of at least one frame of (col. 2, lines 50-51, "average color of the block") said video signal (col. 4, lines 10-20, "host signal … video").

Regarding claim 11, Reed discloses wherein said bit position into which said additional information is impressed is a bit of the integer portion of said value derived from said average (col. 23, lines 60-61, "the final results is an array of samples, each having one of five values: {-2,-1,0,1,2}).

Regarding claim 13, Reed discloses wherein said average of said chrominance portion over said block of said video signal is a DC coefficient of said block in a frequency domain representation of said block of said video signal (col. 38, lines 24-25, "DC component of the color for that block").

Regarding claim 14, Reed discloses wherein said additional information was placed in said at least one selected bit position in a manner that makes a minimum change to said average (col. 36, lines 65-67, "… minimized …").

Regarding claim 15, Reed discloses wherein said additional information being placed in said at least one selected bit position by adding a value to said average so as to make the value of said at least one bit position of said value derived from said average the same as said additional information to be impressed (col. 26, lines 10-17, "… add the detection value …").

Regarding claim 16, Reed discloses wherein said additional information being placed in said at least one selected bit position by adding a value to said average so as to make said at least one bit position the same in said value derived from said average as said additional information to be impressed while making only a minimum change to the value of said average when impressing said data (col. 26, lines 10-17, "… add the detection value …").

Regarding claim 17, Reed discloses wherein said additional information being placed in said at least one selected bit position by adding a value to said average so as to make said at least one bit position of said value derived from said average the same in value as said additional information to be impressed, said adding to said average having been achieved by adding an amount to the said chrominance portion of various pixels of said block, said additions to said pixel chrominance portions being made until a total of such additions equals the product of said value and the number of pixels in a block, said additions being independent of any other changes made to the chrominance portion of said pixels (col. 26, lines 10-17, "… add the detection value …").

Regarding claim 18, Reed discloses wherein said video signal further comprising a margin signal added thereto to reduce the likelihood that said additional information

will be eliminated should said video signal undergo quantization (col. 6, lines 61-67; col. 7, lines 1-19, "… quantization …").

Regarding claim 20, Reed discloses wherein said additional information being placed in said at least one selected bit position by adding only a minimum necessary amount to said average so that in said value derived from said average said at least one bit position is made to have the same value as said additional information to be impressed and said value derived from said average is within a safe range (col. 26, lines 10-17, "… add the detection value …").

Regarding claim 21, Reed discloses wherein said additional information being interleaved within said video signal with respect to its ordering prior to undergoing a process to be impressed therein (col. 20, lines 1-13, "… preprocessing …").

Regarding claim 22, Reed discloses wherein said additional information being channel encoded within said video signal (col. 3, lines 57-60, "an information signal that is embedded in a host signal …").

Regarding claim 23, Reed discloses an apparatus for embedding additional watermarking data within a video signal, comprising: a color selection unit for selecting a chrominance portion (col. 15, line 31, "selected color plane … chrominance plane") of a block (col. 2, lines 50-51, "average color of the block") of said video signal (col. 4, lines 10-20, "host signal … video") to carry a portion of said additional watermarking data (col. 15, lines 22, "two watermark component"); and a data adder that adds information (col. 3, line 57, "information signal") to pixels of said block (col. 2, lines 50-51, "average color of the block") of said video signal (col. 4, lines 10-20, "host signal …

video") thereby causing a change in the average value (col. 17, line 60, "average of samples") of said selected chrominance portion (col. 15, line 31, "selected color plane … chrominance plane") so as to incorporate at least a portion of said additional watermarking data (col. 15, lines 22, "two watermark component") within said changed average value (col. 17, line 60, "average of samples").

Regarding claim 24, Reed discloses wherein said color selection unit comprises a prestored table in computer readable form that indicates for each area within at least a colorspace portion which chrominance portion should be selected for pixels within said each area (col. 34, line 52, "lookup table").

Regarding claim 25, Reed dislcoses further comprising a block interleaver that interleaves said additional watermarking data prior to said additional watermarking data being incorporated within said changed average value (col. 20, lines 1-13, "… preprocessing …").

Regarding claim 26, Reed discloses further comprising a channel encoder that channel encodes said additional watermarking data prior to said additional atermarking data being incorporated within said changed average value (col. 20, lines 1-13, "… preprocessing …").

Regarding claim 27, Reed discloses wherein said data adder modifies only a said selected chrominance portion of said pixels and further comprising a multiplexer for multiplexing at least the unmodified chrominance portion of said pixels and said modified chrominance portion of said pixels (Fig. 2-224, "combine").

Regarding claim 28, Reed discloses wherein said data adder further comprises a bit mapper (col. 9 lines 13-25, "… map …").

Regarding claim 29, Reed discloses wherein said data adder further comprises a texture masking unit that determines a amount of change in said chrominance portion that a pixel can endure while minimizing the likelihood of a visible artifact resulting, and wherein said data adder adds no more than said amount to said pixel (col. 11, lines 17-34, "… mask …").

Regarding claim 30, Reed discloses wherein said data adder adds a further value to pixels of said block of said video signal thereby causing the resulting new average value to be within a safe range (col. 15, line 34, "can range from a single bit").

Regarding claim 31, Reed discloses wherein said data adder changes said average value by the least amount necessary to carry said additional watermark data (col. 15, lines 22, "two watermark component").

Regarding claim 32, Reed discloses wherein said data adder adds a further value to pixels of said block of said video signal thereby causing the resulting new average value to be within a safe range (col. 15, line 34, "can range from a single bit") and wherein said data adder further adds to pixels of said block the value that changes said average value by the least amount possible (col. 17, line 60, "average of samples").

Regarding claim 34, claim 34 is analogous and corresponds to claim 23. See rejection of claim 23 for further explanation.

Regarding claim 35, claim 35 is analogous and corresponds to claim 15. See rejection of claim 15 for further explanation.

Regarding claim 36, claim 36 is analogous and corresponds to claim 15. See rejection of claim 15 for further explanation.

Regarding claim 37, claim 37 is analogous and corresponds to claim 17. See rejection of claim 17 for further explanation.

Regarding claim 53, claim 53 is analogous and corresponds to claim 23. See rejection of claim 23 for further explanation.

Regarding claim 54, claim 54 is analogous and corresponds to claim 23. See rejection of claim 23 for further explanation.

Regarding claim 57, Reed discloses an apparatus for embedding watermarking data within a video signal, comprising: means for receiving a video signal (col. 4, lines 10-20, "host signal … video") in a frequency domain based format (col.9 lines 37-52, "frequency domain"); and means for changing a DC coefficient of at least one block (col. 38, line 25, "DC component of the color for that block") of said video signal(col. 4, lines 10-20, "host signal … video") to carry at least a portion of said watermarking data (col. 15, lines 22, "two watermark component").

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reed et al. (US 6,590,996 B1) in view of Baudry et al. (US 2004/0001626 A1).

Regarding claim 10, Reed discloses all the claim limitations except the one specified in claim 10. However, Baudry discloses wherein the position of said selected bit is determined based on a texture variance of said block (paragraph [0083], “texture”).

Reed and Baudry are combinable because both are pertinent to the art of watermarking of the encoding and decoding process. By adding the steps of watermarking depending on the local characteristics such as texture of Baudry in Reed's method would not destroy any of the original features of Reed. It will actually benefit the Reed’s method to able to watermark the data more reliable and accurately. The texture is one of the characteristics that that the bit or data can be watermark which human can hardly detect the difference. So, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the steps of watermarking depending on the local characteristics such as texture of Baudry in Reed's method for gaining the benefit of reliability and accuracy.

11. Claim 12, 19 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reed et al. (US 6,590,996 B1) in view of Doerr et al. (“A guide tour of video watermarking”).

Regarding claim 12, Reed discloses all the previous claim limitations except the one specified in claim 12. However, Doerr discloses wherein said block of said video signal is in a reduced resolution format such that for each 2.times.2 luminance block of an original version of said video signal, had said original version of said video signal

been in 4-4-4 representation, there remains only one Y, one U, and one V value (section 3.1; page 271, “4:4:4”).

Reed and Doerr are combinable because both are pertinent to the art of watermarking. By adding the steps of chrominance resampling to 4:4:4: taught by Doerr in Reed's method would not destroy any of the original features of Reed. It will actually benefit the Reed’s method to able to watermark the data more efficiently, for resampling the chrominance is commonly used process to reduce storage needs So, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the steps of chrominance resampling to 4:4:4: taught by Doerr in Reed's method would not destroy any of the original features of Reed for gaining the benefit of efficiency.

Regarding claim 19, Doerr further discloses wherein said video signal further comprising a margin signal added thereto to reduce the likelihood that said additional information will be eliminated should said video signal undergo motion picture experts group (MPEG)-type encoding (section 3.1; page 271, “mpeg”).

Regarding claim 33, claim 33 is analogous and corresponds to claim 12. See rejection of claim 12 for further explanation.

## *Conclusion*

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN Wahnkyo LEE whose telephone number is (571)272-9554. The examiner can normally be reached on Monday - Friday (Alt.) 7:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

Customer Service Representative or access to the automated information system, call

800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CHARLES KIM/
Primary Examiner, Art Unit 2624

/John Wahnkyo Lee/
Examiner, Art Unit 2624